

Digital Immigrant Teachers' Perceptions about Digital Native Students: An Investigation into Turkish School Context*

Percepciones de los profesores inmigrantes digitales sobre los estudiantes nativos digitales: una investigación sobre el contexto escolar turco

Burcu Çimen , Şükrü Hangül** 

Ministry of Education, Turkey

Abstract

The aim of the study is to investigate the opinions and perceptions of teachers about the digital native students, who put digital tools, apps, and platforms at the center of their lives, easily adapt to and benefit from new information communication technologies. We focused on (a) the characteristics of the digital generation students, (b) the role of the teacher and the school in the face of digital generation students, (c) the participation of digital generation students in the educational processes, and (d) the problems faced by teachers and the support they need in the face of digital generation students. This study, which has a phenomenological design, used the maximum variation sampling method, one of the purposeful sampling methods preferred in qualitative research. A study group was formed of teachers working at primary, secondary and high school levels of public and private schools. Descriptive analysis was used to analyze the data collected by the interview technique. It was found that the digital native students were introvert and asocial owing to their digital environment, but they were self-confident, successful in classes and focused on creative solutions to problems. Teachers, however, felt inadequate in the face of students' ability to use technology and needed to be trained in educational technologies.

Keywords: Characteristics of Digital Native Students, Learning in Digital Era, Teacher Views on Digital Natives, Digital Competences, Technology in Education.

* This study was presented at the International Symposium of Scientific Research and Innovative Studies (ISSRIS-21) held in Turkey, 22-25 February, 2021.

** Correspondence to Dr. Şükrü Hangül, Ministry of Education, Turkey, shangul65@yahoo.com

Resumen

El objetivo del estudio es investigar las opiniones y percepciones de los profesores sobre los estudiantes nativos digitales, que sitúan las herramientas, aplicaciones y plataformas digitales en el centro de sus vidas, se adaptan fácilmente y se benefician de las nuevas tecnologías de la información y la comunicación. Nos enfocamos en (a) las características de los estudiantes de la generación digital, (b) el rol del docente y la escuela en la era de la educación digital, (c) la participación de los estudiantes de la generación digital en los procesos educativos, y (d) los problemas a los que se enfrentan los docentes y el apoyo que necesitan al enseñar a los alumnos de la generación digital. Este estudio —que tiene un diseño fenomenológico— utilizó el método de muestreo de máxima variación, uno de los preferido en la investigación cualitativa. Se formó un grupo de estudio de profesores que trabajan en los niveles de primaria, secundaria y preparatoria de escuelas públicas y privadas. Se utilizó análisis descriptivo para analizar los datos recolectados por la técnica de entrevista. Se encontró que los estudiantes nativos digitales eran introvertidos y asociales debido a su entorno digital, pero eran seguros de sí mismos, exitosos en las clases y enfocados en soluciones creativas a los problemas. Los maestros, sin embargo se sentían inadecuados ante la capacidad de los estudiantes para usar la tecnología y necesitaban ser capacitados en tecnologías educativas.

Palabras clave: características de los estudiantes nativos digitales, aprendizaje en la era digital, visiones de los docentes sobre los nativos digitales, competencias digitales, tecnología en la educación

INTRODUCTION

With the introduction of the Internet, a technology-based world order has been established. Information and communication technologies have become an integral part of daily life. According to the 2020 Global Digital Report, the number of people using internet in the world is increasing day by day. 60% of the world's population has been identified as active internet users. In addition, due to the global epidemic affecting the whole world and requiring the transition to digital environment, formal education, conferences and meetings were held via the internet. Thus, it is predicted that the number of active internet users globally is on the rise (Eagle, 2020). The technological revolution leads to changes in almost every aspect of life. Transformations have been experienced especially in the ways of accessing information, communicating, learning, and playing games (Sharma, 2017).

The rapid progress of technological developments has created an important difference between generations. The digital divide, which occurred with the effect of the technological revolution, is not limited only between individuals, institutions and societies, but has

turned into a digital gap separating generations. While the new generation was born in an environment integrated with technological products, the previous generation encountered technological products after adolescence. In addition, as generations tend to maintain their own habits, adults strive to live the past, young people the present, and children the future, respectively.

The concepts of “digital nativity” and “digital immigration” have come to the fore due to differences in the use of technology between generations (Arabacı & Polat, 2013). Since Prensky (2001) first used the concept of “digital natives”, it has become a frequently used concept to separate 21st century students from their teachers and parents. Digital natives are considered to be the only generation that grew up with digital technology and had lives equipped with computers, video games, cell phones.

Digital immigrants, on the other hand, are the generation who recognize and use digital technology in their transition to business life. People who got acquainted with technological devices after their adolescence and thus having difficulties in using technology were defined as “digital immigrants”. Digital immigrants consult printed resources rather than the internet to access information, generally avoid using technological tools, prefer to consult with guides before use, and even if they get accustomed to using digital technology, it is understood they are not digital natives from the ways they use digital tools (Prensky, 2004).

The digital difference between generations brings along generational conflicts in the social structure. In schools, which are an important component of society, teachers, who are students' guides and leaders, experience difficulties in the face of changing student characteristics, expectations, new technological equipment and software (Sharma, 2017). According to Prensky's (2001) definition of “digital immigration”, senior teachers in today's schools are considered digital immigrants.

Prensky (2001), with the view that the use of digital technologies differs according to age, stated that children of the 21st century should be well known as the focus of that generation who were born after 1980 is the internet, virtual games, smart phones, and they see technology as a necessity of daily life rather than a need. The expectations and needs of digital natives, who are known to have very different characteristics from the previous generation, also differ. One of the most important features of digital natives is being able to use the internet actively. Efficient use of social networks through the Internet and quick access to the information they seek through search engines are the basic skills that digital natives acquire through active use of the internet (Oblinger & Oblinger, 2005; Tonta, 2009).

As a result of their upbringing and experience with technology, the digital native generation has different learning styles from previous generations (Bennett, Maton & Kervin, 2008). Digital native students prefer to read digital resources instead of printed resources, visuals instead of plain texts, randomly reading in capsules (by jumping from

one text to another) instead of linear readings, they can easily do simultaneous works at the same time, based on the view that their cognitive structures are parallel. They love to learn by exploring with games instead of serious studies (Bilgiç, Duman, & Seferoğlu, 2011; Şahin, 2009). Prensky (2005) stated that unlike the past, students of the new age prefer collaborative and project-based learning in group work with their peers, tend to share their thoughts in every environment, and emphasized that the characteristics of new generation students should be prioritized when organizing educational environments.

In educational activities, it was deemed appropriate to make radical changes in the framework of “coping with” digital natives. As the experimental studies on digital natives increased, so were the wider data related to the technology skills of the digital native generation and their adaptation to technology. In the last two decades, “integrating technology into education” has become one of the most emphasized issues in education policies (Corrin, Bennett, & Lockyer, 2011; Groth, Dunlap & Kidd, 2007). As a result of digital transformations in daily life, the need for digitalization in education has inevitably come to the fore (Taşkıran, 2017). It is considered imperative to incorporate technology into educational applications to prevent the widening of the digital divide between generations. It is increasingly becoming impossible to ignore the need for pedagogical change and technological innovation in educational institutions (Davis & Sumara, 2009; Greenhow, Robelia, & Hughes, 2009; Greenhow, Sonnevend & Agur, 2016).

To strengthen the technological infrastructure of educational institutions in Turkey, Fatih project was introduced with interactive smart board applications and innovations such as the use of tablets. FATİH project, developed in 2010, is a comprehensive project aiming at fundamental changes in the field of integrating information and communication technologies with education. With this project, the use of smart boards in schools has become widespread (Ekici & Yılmaz, 2013). However, as a result of the digital divide between generations, it has been determined that most of the teachers do not have technical knowledge on how to use smart boards and pedagogical competence to organize classroom practices with smart boards (Somyürek, Atasoy, & Özdemir, 2009).

In the process of keeping up with the nature of technological developments, the role of teachers has become more challenging, requiring effort and attention. In the digital age, teachers face different challenges in the face of students, such as students' individual needs, new software and hardware, and individual development needs. Sharma (2017) attributed these difficulties to students' being more knowledgeable, questioning and competitive than teachers thanks to technology. In an educational project run by the OECD (Organization for Economic Co-operation and Development), Pedro (2006) used the concept of “New Millennium Students” in terms of their ability to use digital technology effectively. Difficulties faced in education in the face of new millennium students have been cited as alternative cognitive features, sociocultural values and expectations from the learning-

teaching process. The major problems are that the experiences students acquire through their lives are not supported by the education systems and teachers are unable to meet digital native students' needs and expectations (Şahin, 2009).

Studies in the literature mostly focus on students' frequency of using digital technology and the reasons for using it (Kennedy, Judd, Churchward, & Gray, 2008; Selvi, 2009; Balaman & Karataş, 2012; Koç, 2017), differentiation according to demographic characteristics (Lai & Hong, 2015), and identifying the characteristics of digital native generation (Şahin, 2009; Bilgiç, Duman, & Seferoğlu, 2011; Günüç, 2011). In terms of the educational planning, attainment and evaluation of digital native students, it is vital to study teachers, who play a key role in planning and maintaining educational activities according to the needs and expectations of new age students. Interestingly, teachers who can be regarded as digital immigrant teach new age students who are accepted as digital native. Within this context, we found it necessary to analyze the attributes and characteristics of digital native students, the positive and negative effects of their use of technology based on teachers' perspectives. The aim of the study is to investigate teachers' perceptions about their experiences with digital generation students who can carry out all the daily tasks through information and communication technologies. Our research focused on identifying (a) the characteristics of the digital generation students, (b) the role of the teacher and the school in the face of digital generation students, (c) the participation of digital generation students in the educational processes, and (d) the problems faced by teachers and the support they need in the face of digital generation students. We would like to contribute to the literature by providing findings from Turkish educational context and thus reveal concrete data on which new research could be based for educational planning and implementation.

METHOD

Research Design

This study aimed to analyze teachers' opinions and perceptions based on their experiences with students, who put digital tools and environments at the center of their lives and who can carry out all the daily tasks that can be handled through new technologies. Within this context, qualitative research was used to reveal the meanings attributed by individuals and groups to a social issue under study (Creswell, 2018). The qualitative research method was preferred in that it allows for in-depth analysis of the phenomena related to the subject under investigation (Denzin, 2005).

As regards research design, phenomenology was preferred among qualitative research designs due to the existence of cases that were recognized and considered to be important for investigation in detail (Yıldırım & Şimşek, 2008). The phenomenological design reveals how people interpret the phenomena in their consciousness through their experiences (Bloor

& Wood, 2006; Willig, 2008). The rationale for using the phenomenological design in this study is to reveal how teachers make sense of their experiences regarding the phenomenon of students using digital tools and media comfortably and effectively. With the aim of developing a more comprehensive perspective with digital age students, teacher experiences were used as base data (Fraenkel & Wallen, 2006).

Study Group

Participants of this study are teachers working at different grade levels and schools located in Eskişehir, a central district of Turkey. In order to have variation, teachers from different subjects and different school types were selected as participants. As Creswell (2018) stated, the maximum variation sampling method is a method that includes determining in advance some criteria that differ in places or people and then determining the participants by selecting the places and people that create diversity in accordance with the criteria and reflecting different perspectives and diversity in qualitative studies.

After preliminary interviews, 12 teachers with different subjects working at the primary, secondary and high school levels of public and private schools in the 2019-2020 academic year were included in the study group. In phenomenological designs, there are studies involving participants from one person to 325 people (Miles & Huberman, 1994; Neuman, 2014). It is considered appropriate and sufficient to have a study group of at least 10 participants in studies conducted with phenomenological design (Charmaz, 2011). Codes and demographic information of the teachers who make up the study group are given in Table 1.

Table 1.
Participants' Profiles

Code	Gender	Type of School	Teaching Subject
K1	Female	Primary (Private)	Science
K2	Female	High (Public)	Chemistry
K3	Female	Middle (Private)	Science
K4	Male	Middle (Private)	Counseling
K5	Male	Primary (Public)	English
K6	Female	Primary (Public)	Classroom Teacher
K7	Male	High (Public)	History
K8	Female	High (Private)	Biology
K9	Female	Middle (Public)	Turkish
K10	Male	Middle (Public)	Social sciences
K11	Female	Primary (Private)	Classroom teacher
K12	Male	High (Private)	Literature

Data Collection Tool

Interview which is the most preferred data collection technique in phenomenology designs (Yıldırım & Şimşek, 2006) was employed in the study. Participants in an interview are expected to describe the phenomenon under study according to their own perspective (Patton, 2014). In accordance with the interview technique, the authors first made a literature review and later prepared a draft semi-structured interview form in accordance with the conceptual framework. The draft form was finalized after the opinions of the field experts and the pre-interviews with the teachers. The interview form consists of 8 open-ended questions and a personal information form. Participants were informed about the aim of the study, publication, and interviewing process. After their verbal consent to participate voluntarily, interviews took place at schools. Interviews lasted approximately 30 minutes each and were recorded with a tape recorder.

Data Analysis

The interview data in the form of audio recordings were transcribed verbatim into separate MS Office word files. Inductive analysis, one of the content analysis techniques, was preferred in the analysis of the data. While coding the data, steps such as finding, organizing and interpreting codes, categories and themes were followed (Miles & Huberman, 1994). With the content analysis enabling more detailed analysis of the collected data and access to the concepts, categories and themes that explain the data, codes were extracted from the cases repeated in the data set and emphasized by the participants. By combining similar codes, categories and themes were reached and interpreted (Bengtsson, 2016). Direct quotations were used in the presentation of related data.

Validity and Reliability

Attention was paid to the credibility for the internal validity of the study. After the literature review on the subject, the theoretical framework was determined. While preparing the interview form, questions were developed in accordance with the theoretical framework. During data analysis, texts with common and different meanings were checked and themes were created by the authors. Attention was paid to the internal homogeneity and external heterogeneity criteria of the themes found. In addition, just before interviews, we emphasized that it was voluntary for participants to join in the interview and we tried to make them answer questions sincerely. After the interview, recordings were transcribed and participants were requested to check the outputs for confirmation (Merriam, 2013).

In order to ensure the external validity and reliability of the study, special importance was paid to the transferability of the design and findings of this study to other similar studies. For this purpose, the pattern of the study, data collection tool, and data analysis

were explained in detail (Creswell, 2018). The codes, categories and themes that were created separately by the authors through the analysis of the data were compared and presented through tables and direct quotations.

RESULTS

The aim of the study was to investigate the opinions and perceptions of teachers about the digital native students, who put digital tools, apps and platforms at the center of their lives, easily adapt to and benefit from new information communication technologies. Based on teachers' opinions, this study aimed to reveal teachers' perceptions of digital (native) generation students in terms of (a) the characteristics of the digital generation students, (b) the role of the teacher and the school in the face of digital generation students, (c) the participation of digital generation students in the educational processes, and (d) the problems faced by teachers and the support they need while teaching digital generation students. In this section, direct quotations of teachers' views related to the themes were presented.

A. Characteristics of Digital Generation Students

Teachers were asked about the characteristics that distinguish digital native students, who use technology well, from other students that could be regarded as non-native. According to the participants' statements, we classified the characteristics of the digital natives (digital generation students) as positive and negative. Positive characteristics can be seen as desired elements that could help students grow as successful and independent individuals in school and life with personal and social developments. Negative characteristics are those elements that could hinder an individual and social aspect of growth and these should be handled properly for a harmony between personal and social being. Teachers' answers regarding the characteristics of digital native students are given in Table 2.

Table 2.
Characteristics of the Digital Native Students

Category	Code	Participant
Positive	Have wide imagination	K1, K6, K10, K11
	Open to learning, successful	K1, K3, K5, K8, K9, K10
	Investigator-researcher	K1, K6, K9, K10, K11
	Self-confident	K1, K3, K4, K6, K8, K9, K12
	Productive	K2, K9, K11
	Intellectual	K4
	Can think analytically	K7

Category	Code	Participant
Negative	Technology addicted	K1, K8,
	Asocial, lonely	K1, K2, K5, K7, K9, K10, K11
	Egocentric	K4, K7
	Angry	K8, K12
	Easily bored	K12

Participants' statements revealed that the digital native students have positive characteristics such as having wide imagination, being open to learning, successful, investigative and questioning, self-confident, productive, as well as having intellectual and analytical thinking. Among the positive attributes, self-confidence, being open to learning and success came to the fore. On the other hand, negative characteristics were found to be technology addiction, being asocial and lonely, being egocentric, irritable and getting easily bored. The most repetitive negative attributes of digital natives were that these students were found asocial and lonely by their teachers.

Starting with positive characteristics, Table 2 shows that having high self-confidence (N=7) is the most frequently mentioned positive attribute. Participants' statements revealed that digital native students were seen as confident in themselves thanks to their command of technology and access to information. Having individual tech skills and obtaining information online easily increases digital native students' self-esteem and confidence. Participant K1 referred to this as: *"We have students who have high self-confidence thanks to the ability to access new information without being dependent on someone else, to improve themselves, and to enlighten their environment with their knowledge because they have a very good command of technology"* (K1). Students with advanced tech skills sometimes can help teachers over the smartboard use, which eventually adds up to their increased self-confidence as expressed by K6: *"They can find solutions to the problems I experience in a short time while using the smart board in the classroom. In this way, their self-confidence increases day by day"*.

As regards the 2nd top positive characteristic which is being open to learning and successful (N=6), it is obvious that digital native students are perceived to be successful at school subjects and active during classes which is greatly dependent upon their effective use of information and communication technologies (ICT), making a difference to their advantage in participation and learning. Participant K3 commented as: *"The digital generation students stand out more than other students. Their work differentiates them from other students. (...) Students who use technology well are students who are good academically"* (K3). Similarly, another participant referred to digital native students as being participative in learning and successful: *"Our students, who use technology well, are also open to learning the topics covered in the lessons, especially in their interests. I can say that they are more successful academically"* (K5).

Third most-cited positive characteristic is the investigating & searching (N=5) dimension. Digital native students who are high skilled at using digital tools have advanced skills to search for information and access it. They like investigating and searching online for what they do not know, which sometimes can be beneficial to teachers as well, signaling a slight change in roles: *“Digital generation students gain knowledge by researching what they want to learn with the ease of access to information offered by technology. In the past, students used to run after us teachers, to get information about a subject. Now sometimes we learn from them” (K6).*

Another positive characteristic that we found based on teachers' statements is that digital native students stand out as having wide imagination (N=4) by which they can see problems from different angles and propose solutions. This can have a positive effect on both teachers and other students: *“They broaden our perspective on the environment, broadening the perspectives of both teachers and fellow students with their broad imaginations. The examples they give in the lessons in accordance with the outcomes are the best proof of this situation (K1)”*. A similar appraisal comes from K8: *“(...) Students who use technology to really improve themselves and to learn things they do not know approach a related situation from a different angle. Their friends also learn this, and I sometimes get information about a subject I do not know from those children”*.

Digital native students are also identified as being productive and analytical in their project works. They like learning by searching, creating and taking part in projects. The opportunity of accessing and using digital tools help them improve their knowledge and productiveness. Participant K4 emphasized students' creative skills and guiding involvement in projects: *“We see the digital generation students as intellectual, self-educated students who are in line with the tools of the age. These students are also very confident in making projects, making presentations, and explaining what they know”(K4)*. Another teacher focused on their analytic thinking and reasoning skills leading to varied perspectives and solutions: *“Students who use technology well are able to think more analytically. Perspectives can be different. They teach us to think differently. They show that there may be more than one way, maybe they go into detail and find a solution to the problem with deduction”(K7)*.

Based on the analysis of interview data, we also reached at some negative characteristics regarding digital native students. As shown in Table 2, the most repeated code is that students are perceived to be asocial and lonely. As the digital native students spend a lot of time using information and communication technologies such as tablets, mobile phones, it is understood that they cannot have robust interpersonal relationships with their peers and are distanced from the society over time and they are described as asocial and lonely by their teachers. Participant teachers complain that these students are sort of absorbed in digital life and are not much aware of their real surroundings, which leads to inappropriate

codes of behaviors and speech, implying a lack of socializing. Teacher participant coded as K5 commented as *"Since they always have a phone or tablet in their hands, they become insensitive to their environment. I think they have developed a lonely personality away from society"*. Likewise, K3 supported the idea that digital world has brought in digital loneliness and these students are lonely and remote from the real world: *"These types of children are always alone. These are what I call digital loneliness. Unfortunately, these children are lonely and lonely. Because they do not get along very well with their environment"* (K3).

Participant teachers also emphasized that these students do not know how to get along with their peers and called for attention to character development and guidance by teachers: *"These students seem asocial to me, because they have different thoughts, they cannot get along with other students and they sometimes say humiliating things to them. We also need to support the character development of digital generation students"* (K11). Another participant focused on the behavior deviation saying: *"We observe that students have some problems with their behavior. I think they behave asocial in an inhumane manner. They connect to something, they connect to a machine, but I think they have problems communicating with people who have souls because this machine has no soul"* (K7).

Digital native students were also perceived to be technology-addicts and also egocentric. They are mostly absorbed in using tech products like tablets and phones, which gradually makes them more dependent on digital tools creating a gap with outer social world. Putting themselves in the center of digital life as well as diminishing social interaction with peers and environment might have led to egocentric thoughts and behaviors. K8 warned against addiction saying *"Digital generation students cannot do without technological tools, I think they are technology addicts"*. As regards egocentrism, K3 commented that *"Students who cannot stay away from technology cannot be sensitive to their environment. They only think of themselves. The social aspects of the projects they create may be missing."*

Finally, though not frequent, digital native students were thought to have some degree of emotional instability like getting angry and bored easily as their speech content was mostly tech-related and they were not understood by their peers. Digital native students were also involved in seeing practical outputs, lacking patience: *"Since they speak in technological terms, they are sometimes not understood by their friends. They get angry when they are not understood. Also, anything impractical makes them nervous"* (K8). Another participant focused on how easily these students got bored if there wasn't much tech content: *"I try to use technological methods because the subjects are not related to technology. Such applications seem simple to digital generation students and they feel bored in class. I think their general moods are prone to boredom"* (K12).

B. Role of the Teachers and Schools in the Face of Digital Generation Students

Teachers' statements about the changes in the role of teachers and schools in the face of the new digital technology generation were analyzed. We found that teachers were implying role transitions as regards the teaching profession and the school itself in this digital era. Teachers perceived themselves to be leading & guiding students on how to use the comprehensive knowledge that students gained from their technological environment. Teachers also remarked that they should constantly improve themselves, instead of simply transmitting knowledge. Participants' statements also revealed that they need to be having effective media literacy and mastering educational technologies to keep up with the educational expectations and instructional requirements of digital native students.

Table 3.
The Role of the Teacher and School towards Digital Natives

Category	Code	Participants
Teacher's role	Information organizer	K1, K3, K8
	Guiding and leading	K5, K7, K8, K10, K11
	Effective media literacy	K2,
	Continuous self-improvement	K1, K2, K4, K5, K9, K10, K11, K12
	Good command of educational technologies	K4, K6, K9, K10, K11,
Role of schools	Providing digital documents	K10
	Having technological infrastructure	K4, K11, K12
	Creating guiding education staff	K12

Table 3 indicates that the most frequently repeated codes regarding the changing roles and expectations from teachers are continuous self-improvement (N=8), guidance and leading (N=5), and having knowledge of educational technologies (N=5). What teachers expected from their school was the technological equipment support. The most frequently repeated code in the role of & expectation from the school category is having & providing technological infrastructure (N=3).

Teachers mostly stated that they were and needed to be in a role of continuous self-improvement with a concern that they sometimes felt themselves inadequate in front of digital native students as regards their (poor) skills in using educational technology. Teachers expressed that they realized the importance of being a life-long learner in terms of updating their skills so that they could be respected: *"We strive to improve ourselves in every direction. For example, we have to use smart boards better than students, I remember working hard to learn all kinds of features of these boards to do this"* (K4). Participant K10 also emphasized the

importance of continuous learning and self-growth: *"The teacher needs to improve himself, as there is so much information that increases with technology. It will also be beneficial for the teacher to have more knowledge than the student about technology"* (K10).

Leading and guiding students towards using digital tools more effectively and mastering digital educational tools for better teaching are both among the 2nd most mentioned expectations from fellow teachers. Participants emphasized that students need to be supervised and guided while benefiting from digital tools and while searching for information, selecting and using it: *"As you go to a library, you look for more than one source, in the same way, I think more than one site should be searched in the digital environment and this information should be verified. We need to be able to predict which sites students can access, and in this sense, we need to guide them in accessing information and using technology"* (K7). To guide students into better learning outcomes through integrating digital tools into classes, teachers reflected on their case and need for development: *"We need to be active in using educational technologies. Project-based teaching and teaching through simulation should become widespread in our schools. We, as teachers and as a school, have to improve ourselves in order to reach the level of these students"* (K11).

Regarding the roles of / expectations from school, teachers expressed that their schools need to provide technological infrastructure so they can have better classes and develop digital competences to effectively address digital natives: *"In order for us to master educational technologies, our school needs to support us as a technological infrastructure. In a school where we have difficulty even connecting to the internet, it becomes difficult to address our digital generation students as well"* (K11).

C. Evaluation of Education and Training Processes towards Digital Native Students

The effectiveness of academic education and training processes on digital native students is another crucial dimension of this study. In terms of the teaching and training processes towards digital natives, participants stated that they preferred different teaching methods and techniques to appeal to digital generation students. Some participants expressed that they took part in seminars about digital educational media and it helped them. Teachers mostly took advantage of using or felt compelled to use digital materials to attract their students' attention and motivate them in classes, which according to them resulted in better learning: *"We are informed about many different educational technologies, we already receive seminars about them at our school. We also follow digital games and technological devices made in this genre. We take care to use Web 2.0 tools in our lessons"* (K2). Participant K6 made a comparison between his old days and the current time, focusing on the use of technology in education: *"When we were students, visuals or three-dimensional educational models were not*

used much. We were just imagining them. Nowadays, we can examine an object from the smart board or any medium such as a tablet or computer; We can look at every side of it by changing every aspect. 3D technology appeals to digital generation students, it attracts their attention” (K6).

Participants thinking that integrating digital tools and materials in teaching activities were effective on digital native students in terms of delivering a determined curriculum, stated that tech or digitalization was not nourishing the educational dimension, which displayed itself in the individual’s acculturation and the process of developing desired behavior change. Participant K7 warned that digital natives may lack in spiritual/moral education and this could retard their character development and social being:

“Academic learning, creating knowledge and transferring information to students could be done through methods that interest them. But I believe that being able to educate and direct a student in the spiritual sense, in the moral sense, in the sense of his structure in society, can only be possible with a person. It is not possible to prioritize technology, sometimes we cannot achieve this in digital generation students, it is very difficult to attract their attention” (K7).

D. Problems Teachers Have with Digital Generation Students and Support They Need

In this part, we analyzed and depicted the problems faced by teachers and the support they need while dealing with students who use technology well, namely digital natives. Based on participants’ statements, we found that the new generation’s skills and needs differ very much from that of traditional generation, which creates gaps and some sort of conflict within educational and social contexts. Teachers were not brought up with technological tools however they are expected to teach with them. Hence, during this process problems are encountered by teachers.

Table 4.

Problems That Teachers Face and Support They Need While Teaching Digital Students

Category	Code	Participants
Problems faced	Intensity of information reached by the student through the internet	K3, K6, K12
	Falling behind students in using technology	K1, K2, K4, K6, K8, K9, K10, K11,
	Technological competition among students	K5, K7
	Student causing cyber problems	K12

Category	Code	Participants
Support needed	Branch-based development programs in educational technologies	K1, K2, K4, K7, K8, K9, K10, K11, K12
	Training on smart board and computer use	K6, K7
	STEM, Software and Coding training	K3, K11
	Technological equipment support	K5, K7,

As for problems listed in Table 4, teachers' falling behind digital native students in using technology (N=8) is the most frequently mentioned problem. The second common problem is the intensity of information obtained by students thanks to the internet (N=3). These two problems indicate a loss of teachers control on students and that students do not much regard teachers as sources of information and authority any longer.

The top problem faced by teachers was that teachers were not able to develop their digital skills and keep up with their students who were almost experts on tech matters. Teachers commented that although they made efforts to keep updated about subject matter and educational technology, they did encounter problems as they were falling behind the digital native students in keeping up with new software, tools and efficient use of technology. Facing the same problem, participant K11 mentioned about their experience as:

"... Since our students use technology very well, they develop projects about programs that we haven't heard of until today and you become their advisor. In this case, you need to know the program they are talking about. Most of the time, I study these programs myself at home, trying not to let the students realize that I have no knowledge of this program. But still we are lagging behind the student "

The second common problem was students' access to high volume of information online. The internet has changed how people access, obtain and use information. Likewise, the intensity (pollution) of information accessed by the digital native students via the internet created problems of credibility of teachers' knowledge. Teacher K6 put it as: *"The child believes in every piece of information on the internet as correct information and thus misconceptions can occur. While the teacher explains the subject, it seems to them as if the teacher is teaching the subject incompletely or teaching it wrong"*.

Finally, digital native students are skilled at using technological educational tools and programs. They have good knowledge on the functioning of programs as well. This knowledge however could result in abuse or misuse of tools and software programs causing cyber problems. Participant K12 expressed their concerns as follows: *"Thanks to some programs that they have found (illegally), they have found ways to connect even to sites that are restricted by the Ministry of Education, and I am still surprised how they do it."*

In terms of support, we also wanted to reveal in what areas participants needed support while teaching digital natives. In terms of the professional and technological support, teachers pointed to branch-based training programs in educational technologies (N=9), training on the use of smart boards and computers (N=2), STEM, software and coding training (N=2) and technological equipment support (N=2).

Teachers clearly stated that to be able to teach the digital native students effectively they need training support on the use and integration of educational technologies in their classes. The training or seminar could help them prepare more interactive lessons attracting further attention, which may not be possible through traditional methods and materials. Expressing their need for support, K1 commented as: *“For my science classes, support can be provided on how to use simulation and experiment programs on smart board to make the topic more interesting”* (K1). Similarly, K7 expressed their intention to participate a seminar and make their classes eye and attention catching: *“I would like to join trainings in my branch related to three-dimensional or virtual reality programs, animation and flash player games”* (K7). Finally, participants K2 and K9 referred to their demand for the subject-based educational technology seminars by saying:

“I would very much like branch-based education technologies seminars to be held in our school. After all, kids are interested in technology, so we can't teach them traditionally. Therefore, there should be a program for us to learn new methods to make our lesson more attractive to attract them to the lesson” (K2).

“I know that there are very good technological games that can be used for my branch, but I do not know how to apply them. If the use of these types of games are explained to us in a planned and programmed way, we can make teaching very easy. I would definitely like to participate in such a thing” (K9).

DISCUSSION

This study was conducted to reveal teachers' views on digital native students, particularly the characteristics of the digital (generation) students, the role of teachers and school in the face of the digital native students, the participation of digital generation in the educational processes, the problems experienced by teachers in the face of digital native students and the dimensions of support they needed. Teachers' views on digital native students who were born in the digital technology environment and who grew up under the influence of these technologies were researched. The results of this study are presented in comparison with the studies in the literature.

Teachers participating in the study thought that the digital native students had strong self-confidence and were successful academically, but they observed that these students were asocial and lonely. Prensky (2005) stated that unlike the past, students of the new age

prefer collaborative and project-based learning in group work with their peers, and they tend to share their thoughts in every environment because they have strong self-confidence. Similarly, Şahin (2009) examining the student characteristics of the new millennium, concluded that although the internet provides more opportunities for socialization in cultural and social values, it increases the sense of loneliness in students. Pedro (2006) also stated that although the social environment of digital students seems to be developed in the digital sense, they are mostly alone in their physical environment. Finally, Koç (2017) found that digital native students are far from social life, but their perception towards learning is clear.

Regarding expectations from teachers and the schools, it was seen that teachers are in a position to guide digital native students on how to use the comprehensive knowledge they have gained from their technological environment and that teachers should constantly improve themselves instead of being a knowledge transmitter. Unlike their traditional roles, teachers are expected to have roles and responsibilities for organizing information for students, guiding and leading them with effective media literacy skills, following continuous self-improvement and mastering educational technologies. Prensky (2001) stated that teachers should be able to communicate with students by learning the digital language and terms used by students and focus on how they can teach the content to them with the language of digital native students. Another related result of this study is that the school should have technological infrastructure to support teachers in developing themselves in digital technologies. İşman (2002) mentioned that one major objective of education is to raise individuals who can use and produce science and technology. In line with this goal, teachers should have a good command of education and communication technology, and all elements of the education system should support the development of teachers.

In the evaluation of the education and training processes towards the digital native students, teachers preferred different teaching methods and techniques to appeal to those students. In addition, teachers thought that teaching activities are effective on digital generation students in terms of providing students with a pre-determined curriculum, but they are not effective on digital generation students in the education dimension, which is defined as the individual's acculturation and the process of developing desired behavior change. Prensky (2001) stated that it is compulsory for teachers to use digital methods in teaching techniques. However, Blau, Peled and Nusan (2016) found that teachers prefer to use traditional tools and do not benefit from technology, despite the availability of laptops and electronic contents. Somyürek, Atasoy, and Özdemir (2009) stated that most of the teachers do not have technical knowledge on how to use smart boards and pedagogical competence to organize classroom practices with smart boards.

We analyzed and classified the problems faced by teachers while teaching digital generation students and the supports they need. Teachers faced difficulties in dimensions

such as lagging behind students in using educational technologies, the intensity of information that students reach via the internet, technological competition among students, and students causing cyber problems. In addition, teachers stated that they needed branch-based development programs, training on the use of smart board and computers, STEM, training on software and coding and technological equipment support in educational technologies. Schaffhauser (2014) stated that the digital generation has more technological understanding than teachers thus it is necessary to provide high quality education opportunities for teachers to use technology more effectively and to integrate technological content into lessons. The teacher is at the center of any teaching-learning process. In the digital age, the teacher is expected to be qualified to keep up with changing technology and digitize learning environments in addition to their traditional roles (Sharma, 2017).

CONCLUSION

This study investigated teachers' perspectives about digital native students who are very skilled at using technology and are absorbed in the digital world. From positive aspect, digital native students were found to be self-confident and open to learning individuals with academic achievements mostly due to their digital skills. From negative aspect, they were perceived as tech addict, asocial and lonely with a misconduct of behavior and speech. Teachers felt they were back of digital native students as regards the use of educational technology and stated they need to be trained for effective use and integration of digital tools. Teachers also attempted to enrich their classes through digital materials so that they can attract digital native students.

Within this context, there occurs a necessity for teachers to face this situation and adapt to the digital world by getting help from professionals, and to change the methods they use in lessons according to the needs of the students. Since students are followers of technological developments, educational institutions are expected to integrate technologies into their teaching processes. However, caution should also be taken to deal with loneliness, misconduct of behavior and deterioration of spirituality that digital natives could experience.

In Turkey, many schools have ICT teachers who could train their colleagues for improved digital skills and capacity. Also, local education authorities plan and deliver similar training seminars. At top level, Ministry of Education has been actively delivering many kinds of in-service professional development seminars including digital skills building. Especially during the pandemic, online trainings have attracted teachers to develop their skills. However, the number of local and national seminars could be increased and more teachers could be accepted for trainings. In addition, student teachers continuing their initial teacher education at university could be exposed to digital teaching courses and their curriculum could be updated to include digital education tools and strategies.

Further research could also focus on the socio-affective states of digital native students detailing their social and psychological progress and drawbacks along with proper treatment programs.

Limitations:

As regards the limitations, this study is limited to a specific geographical area from which schools and participants were included. Although participants were selected from various school levels, private and public schools and a range of teaching subjects, school/ participant profiles may not have represented adequate variations. New research could be carried out in different parts of Turkey and abroad to compare similarities and differences.

REFERENCES

- Arabacı, İ. B. ve Polat, M. (2013). Dijital yerliler, dijital göçmenler ve sınıf yönetimi. *Elektronik Sosyal Bilimler Dergisi*, 12(47), 11-20.
- Balaman, F. ve Karataş, A., (2012). Lise öğrencilerinin internet ortamında sosyal paylaşım sitelerini kullanım amaçları ve sosyal paylaşım unsurları. *Batman Üniversitesi Yaşam Bilimleri Dergisi*, 1(1), p. 497-504.
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8-14.
- Bennett, S. J., Maton, K. A. & Kervin, L. K. (2008). The 'digital natives' debate: a critical review of the evidence. *British Journal of Educational Technology*, 39 (5), 775-786.
- Bilgic, H. G., Duman, D. ve Seferoğlu, S. S. (2011). Dijital yerlilerin özellikleri ve çevrim içi ortamların tasarlanmasındaki etkileri. *Akademik Bilişim*, 2-4 Şubat, İnönü Üniversitesi, Malatya.
- Bloor, M. & Wood, F. (2006). *Keywords in qualitative methods*. Thousand Oaks, London, New Delhi: Sage Publications.
- Charmaz, K. (2011). Grounded theory methods in social justice research. *The Sage Handbook of Qualitative Research*, 4, 359-380.
- Corrin, L., Bennett, S. & Lockyer, L. (2011). The life of a 'digital native'. In T. Bastiaens & M. Ebner (Eds.), *ED-MEDIA 2011: World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 2942-2951). Chesapeake, VA: AACE.
- Creswell, J. W. (2018). *Nitel araştırma yöntemleri: Beş yaklaşıma nitel araştırma ve araştırma deseni* (Çeviri Ed. M. Bütün, S. B. Demir). Ankara: Siyasal Kitabevi.
- Denzin, N. (2005). *The art and politics of interpretation*. In *Handbook of Qualitative Research*. (Eds. N. K. Denzin, Y.S. Lincoln): 500-515. Thousand Oaks California: Sage.

- Eagle, L. (2020). Coronavirus Flash Survey: March 2020, *S&P Global*. Retrieved from: <https://www.spglobal.com/en/research-insights/featured/coronavirus-flash-survey-march-2020>
- Ekici, S. ve Yılmaz, B. (2013). FATİH projesi üzerine bir değerlendirme. *Türk Kütüphaneciliği*, 27(2), 317-339.
- Fraenkel J. R. & Wallen N. E. (2006). *How to Design and Evaluate Research in Education*. New York: McGraw-Hill.
- Greenhow, C., Sonnevend, J. & Agur, C. (2016). *Education and social media: toward a digital future*, Cambridge, MA: MIT Press.
- Greenhow, C., Robelia, B. & Hughes, J. E. (2009). Learning, teaching, and scholarship in a digital age. *Educational Researcher*, 38, 246-259.
- Groth, L. A, Dunlap, K. L. & Kidd, J. K. (2007). Becoming technologically literate through technology integration in PK-12 preservice literacy courses: Three case studies. *Reading Research and Instruction*, 46(4), 363-386.
- Günüç, S., 2011. Dijital yerlilerde çalışan bellek ve çoklu görev. *5th International Computer&Instructional Technologies Symposium*, Elazığ <https://www.fundalina.com/2020-yili-global-dijital-raporu/>
- İşman, A. (2002). Sakarya'da görev yapan öğretmenlerin eğitim teknolojileri yönünden yeterlilikleri. *The Turkish Online Journal of Educational Technology*, 1(10), 72-91.
- Kennedy, G. E., Judd, T. S., Churchward, A. & Gray, K. 2008. First year students' Experiences with technology: Are they really digital natives. *Australasian Journal of Educational Technology* 24 (1), 108-122.
- Koç, İ. (2017). *Marc Prensky'nin dijital yerli kavramı çerçevesinde 11. Sınıf öğrencilerinin özellikleri ve eğitim-öğretim ortamlarından beklentileri*. Yayınlanmamış Yüksek Lisans Tezi, Mustafa Kemal Üniversitesi, Hatay.
- Lai, K., & Hong, K. 2015. Characteristics of students in higher education: Do generational Differences exist. *British Journal of Educational Technology* 46(4), 725-738.
- Miles, M. B. & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. New York: Sage.
- Neuman, L. W. (2014). *Social Research Methods: Qualitative And Quantitative Approaches*, 7th ed. Essex: Pearson Education Limited.
- Oblinger, D. G., & Oblinger, J. L. (2005). Educating the net generation. Retrieved from: <https://www.educause.edu/ir/library/PDF/pub7101.PDF>
- Pedró, F. (2006). The New Millennium Learners: Challenging Our Views On Ict And Learning. Retrieved from: <https://publications.iadb.org/publications/english/>

document/The-New-Millennium-Learners-Challenging-our-Views-on-ICT-and-Learning.pdf

- Prensky, M. (2001). Digital Natives, Dijital Immigrants. *On The Horizon*, 9(5), 1-3.
- Prensky, M. (2004). The Emerging Online Life of the Digital Native: What they do differently because of technology and how they do it, 1-14. Retrieved from: https://marcprensky.com/writing/Prensky-The_Emerging_Online_Life_of_the_Digital_Native-03.pdf
- Prensky, M. (2005). Teaching Digital Natives: Partnering for Real Learning, 1-12, Retrieved from: https://marcprensky.com/wp-content/uploads/2013/04/Prensky-TEACHING_DIGITAL_NATIVES-Introduction1.pdf
- Schaffhauser, D. (2014). Report: Teachers better at using tech than digital native students. *The Journal*. Retrieved from: https://thejournal.com/Articles/2014/10/22/Report-Teachers-Better_at-Using-Tech-than-Digital-Native-Students.aspx?p=1
- Selvi, H., (2009). *Ortaöğretim öğrencilerinin İnternet kullanım düzeyi*. Yayınlanmamış Yüksek Lisans Tezi, Sakarya Üniversitesi, Sakarya.
- Sharma, M. (2017). Teacher in a dijital era. *Global Journal of Computer Science and Technology: G Interdisciplinary*, 17(3), 10-14.
- Somyürek, S., Atasoy, B. ve Özdemir, S. (2009). Board's IQ: What makes a board smart? *Computers & Education*, 53, 368-374.
- Şahin, M. C. (2009). Yeni binyılın öğrencilerinin özellikleri. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 9(2), 155-172.
- Taşkıran, A. (2017). Dijital Çağda Yükseköğretim. *Anadolu Üniversitesi Açık Öğretim Uygulamaları ve Araştırmaları Dergisi*, 3(1), 96-109.
- Tonta, Y. (2009). Dijital yerliler, sosyal ağlar ve kütüphanelerin geleceği. *Türk Kütüphaneciliği* 23(4), 742-768.
- Willig, C. (2008). *Introducing qualitative research in psychology* (2. Ed.). Berkshire: McGraw-Hill Professional Publishing.

Receipt: 16/05/2021

Acceptance: 29/06/2021